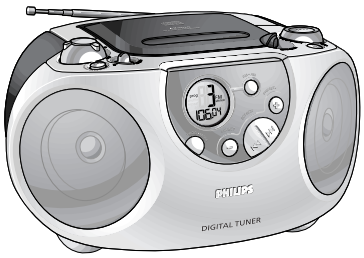
CD Sound Machine

AZ 3010
AZ 3011
AZ 3012
all versions

Service
Service
Service



Service Manual

COMPACT disc DIGITAL AUDIO

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CLASS 1
LASER PRODUCT

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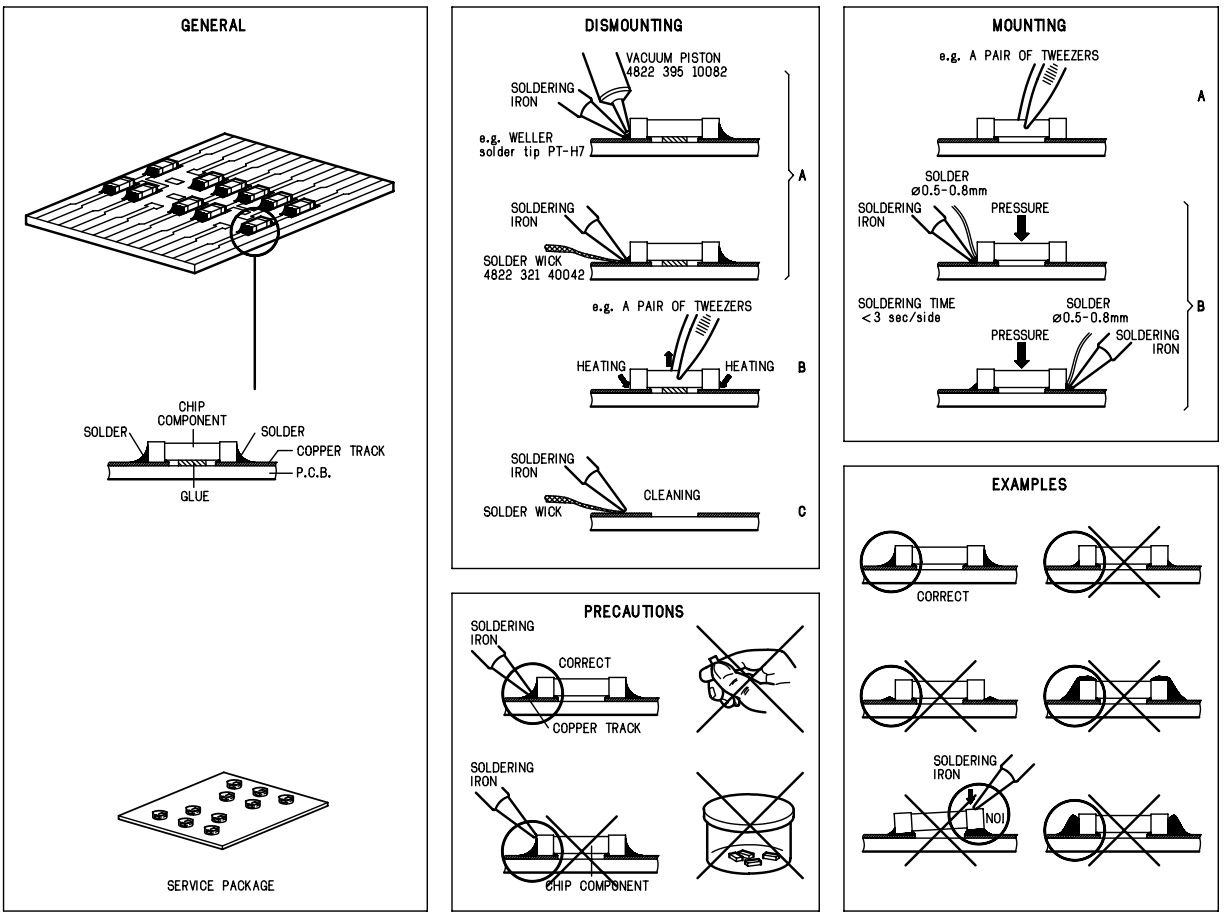
GB 3140 785 22930

PHILIPS

HANDLING CHIP COMPONENTS



GB WARNING
All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wristband with resistance. Keep components and tools at this potential.

ESD

NL WAARSCHUWING
Alle IC´s en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen vermindern. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

F ATTENTION
Tous les IC et beaucoup d´autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévite pourrait être considérablement écourtée par le fait qu´aucune précaution nést prise à leur manipulation.
Lors de réparations, s´assurer de bien être relié au même potentiel que la masse de l´appareil et enfileer le bracelet serti d´une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l´on utilise soient également à ce potentiel.

D WARNUNG
Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren.
Sorgen Sie dafür, daß Sie im Reparaturfall über ein Pulsarmband mit Widerstand mit dem Massepotential des Gerätes verbunden sind.
Halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.

I AVVERTIMENTO
Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione. Durante le riparationi occorre quindi essere collegato allo stesso potenziale che quello della massa delápparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

SAFETY

GB
Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.
Safety components are marked by the symbol ⚠

F
Les normes de sécurité exigent que l`appareil soit remis à l`état d`origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.
Les composants de sécurité sont marqués ⚠

D
Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Gerätes darf nicht verändert werden. Für Reparaturen sind Originalersatzteile zu verwenden.
Sicherheitsbauteile sind durch das Symbol ⚠ markiert.

NL
Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.
De Veiligheidsonderdelen zijn aangeduid met het symbool ⚠

I
Le norme di sicurezza estigono che l´apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambiago identici a quelli specificati.
Componenty di sicurezza sono marcati con ⚠

CLASS 1 LASER PRODUCT

GB **DANGER**: Invisible laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM.

S Varning !
Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

DK Advarsel !
Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsaettelse for stråling.

FIN Varoitus !
Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen !

GB
After servicing and before returning the set to customer perform a leakage current measurement test from all exposed metal parts to earth ground, to assure no shock hazard exists.
The leakage current must not exceed 0.5mA.

F
"Pour votre sécurite, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

TECHNICAL SPECIFICATIONS

GENERAL

Mains voltage	-/00C	:	230 V
	-/01	:	120 / 230 V
	/05/10	:	240V
	-/17	:	120 V
Mains frequency	-/00C/05/10	:	50 Hz
	-/01	:	50 / 60 Hz
	-/17	:	60 Hz
Battery	main set	:	9 V (R14 x 6)
Power consumption		:	< 20 W (max.)
Dimension (W x H x D)		:	294 x 145 x 245 mm
Weight		:	2.4 Kg

AMPLIFIER

Output power	mains	:	2 x 1 W
	battery	:	2 x 1 W
Speaker impedance		:	2 x 8 ohm
Frequency response		:	100 Hz - 10 kHz (–3dB)

COMPACT DISC

Frequency response		:	100 Hz - 10 kHz – 2dB
S/N ratio		:	60 dB
Channel difference	1 kHz	:	2 dB
Channel crosstalk	1 kHz	:	40 dB
Laser wavelength		:	780 – 20 nm
Laser light power		:	< 0.5 mW

TUNER - FM SECTION

Tuning range	:	87.5 - 108 MHz
IF frequency	:	10.7 MHz – 0.2 MHz
Sensitivity	:	20 dBf at 26dB S/N
Selectivity	:	30 dB at 300kHz
IF rejection	:	50 dB
Image rejection	:	20 dB
Crosstalk	:	20 dB

TUNER - AM SECTION

Tuning range	MW	:	531 - 1602 kHz
	-/17	:	530 - 1700 kHz
IF frequency		:	450 kHz – 1 kHz
Sensitivity	MW	:	4500 V/m at 26dB S/N
Selectivity	MW	:	16 dB
IF rejection	MW	:	60 dB
Image rejection	MW	:	28 dB

SERVICE TOOLS

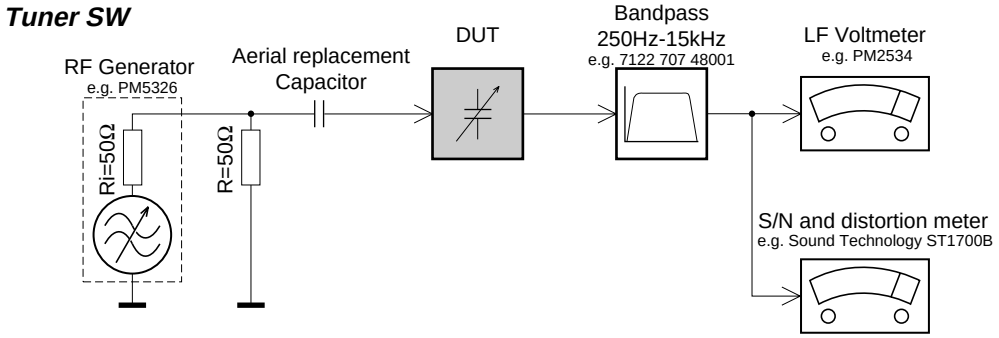
Audio signal disc SBC 429.....4822 397 30184
Playability test disc SBC 444.....4822 397 30245
Test disc 5 (disc without errors) +
Test disc 5A (disc with dropout errors, black spots and fingerprints)
SBC 426/426A.....4822 397 30096
Burn in test disc (65 min. 1kHz signal at -30 dB level without “pause”).....4822 397 30155

AVAILABLE ESD PROTECTION EQUIPMENT

anti-static table mat	large 1200x650x1.25mm	4822 466 10953
	small 600x650x1.25m	4822 466 10958
anti-static wristband		4822 395 10223
connection box (3 press stud connections, 1MΩ)		4822 320 11307
extendible cable (2m, 2MΩ, to connect wristband to connection box)		4822 320 11305
connecting cable (3m, 2MΩ, to connect table mat to connection box)		4822 320 11306
earth cable (1MΩ, to connect any product to mat or to connection box)		4822 320 11308
KIT ESD3 (combining all 6 prior products - small table mat)		4822 310 10671
wristband tester		4822 344 13999

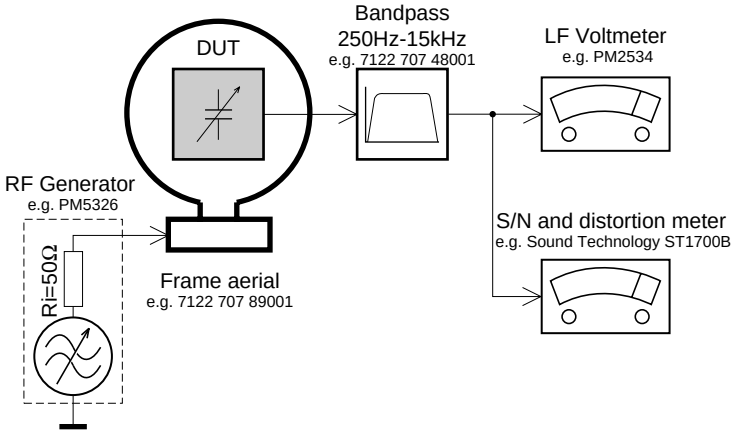
SERVICE MEASUREMENT

Tuner SW



To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday«s cage.
Use a bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).

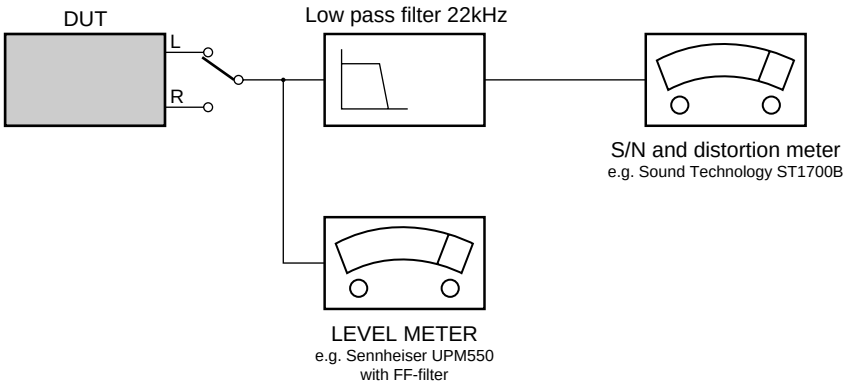
Tuner AM (MW,LW)



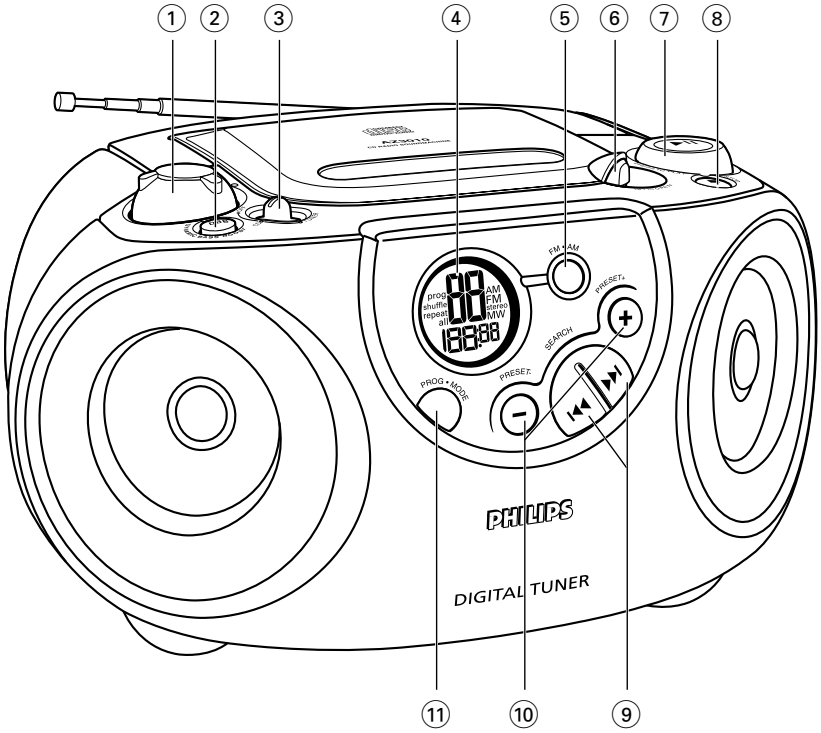
To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday«s cage.

CD

Use Audio Signal Disc SBC429 4822 397 30184 (replaces test disc 3)
L.P.F. = 13 th order filter 4822 395 30204



CONNECTIONS AND CONTROLS



Top and front panels (See 1)

① **VOLUME**
– adjusts volume level

② **DBB** (Dynamic Bass Boost)
– enhances bass response

③ **Source selector**
– selects source of sound CD or TUNER. Also the power off switch

④ **Display**
– shows the CD and tuner functions

⑤ **FM•MW (AM)**
– selects FM/ MW (AM) waveband

⑥ **LIFT TO OPEN**
– opens/ closes the CD door

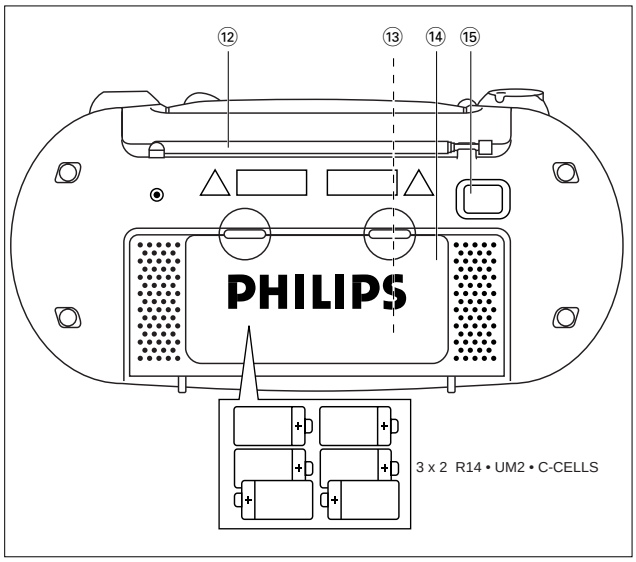
⑦ **PRESS TO PLAY ▶II**
– starts or pauses CD play

⑧ **STOP ■**
– stops CD playback; erases a CD programme

⑨ **SEARCH ⏮ , ⏭**
CD: skips or searches a passage/track backwards or forward
Tuner: tunes to a station (up, down)

⑩ **PRESET +, –**
– selects a preset station (up, down)

⑪ **PROG MODE**
CD: – programmes and reviews programmed track numbers;
– plays tracks CD/ programme in random order;
– repeats a track/CD/ programme
Tuner: – programmes preset stations



Back Panel (See 1)

⑫ **Telescopic aerial**
– to improve FM reception

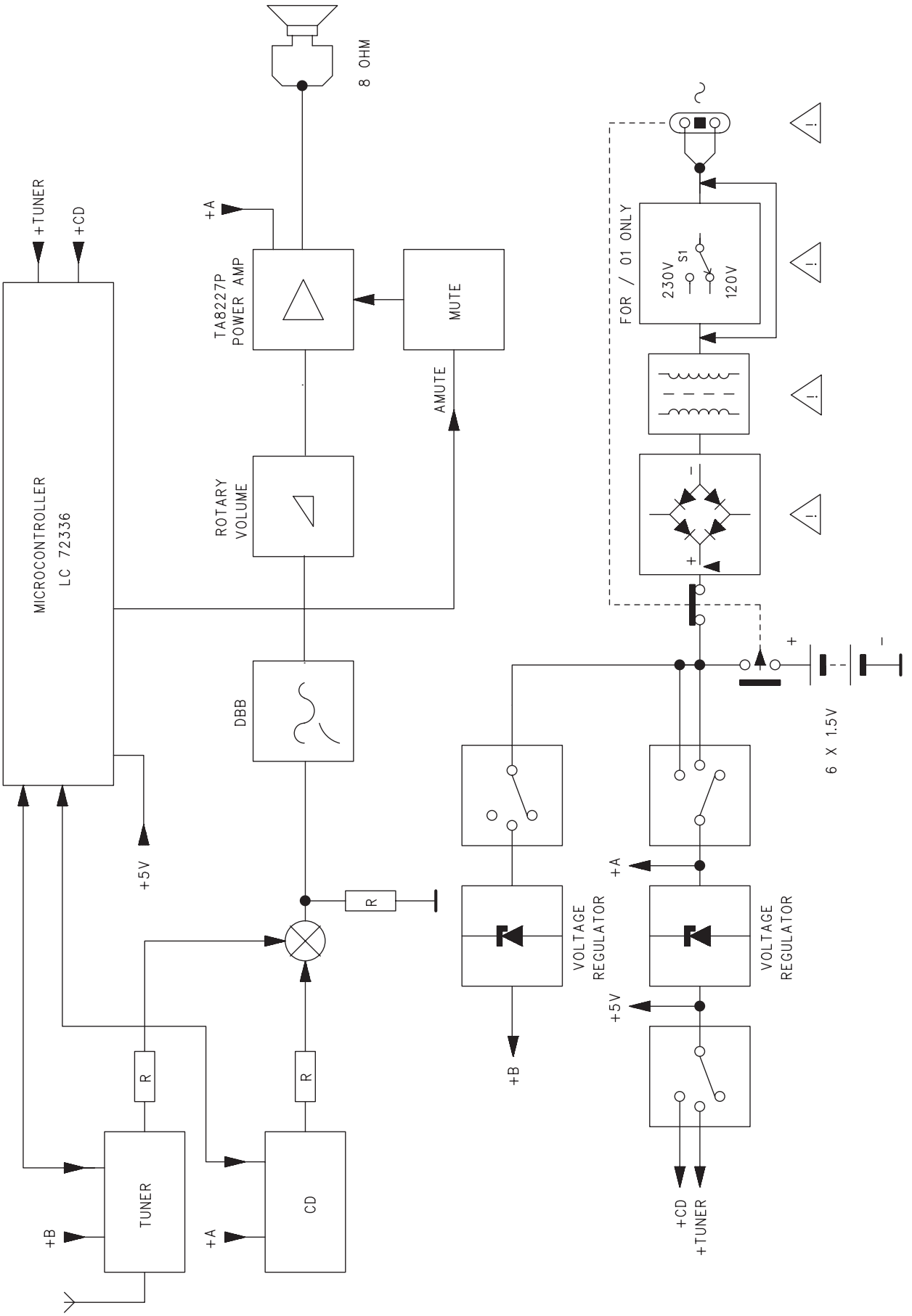
⑬ **Voltage selector** *(inside battery compartment, some versions only)*
– adjust to match the local voltage 110/220V before plugging in the set

⑭ **Battery door**
– to open battery compartment

⑮ **AC MAINS**
– inlet for mains lead

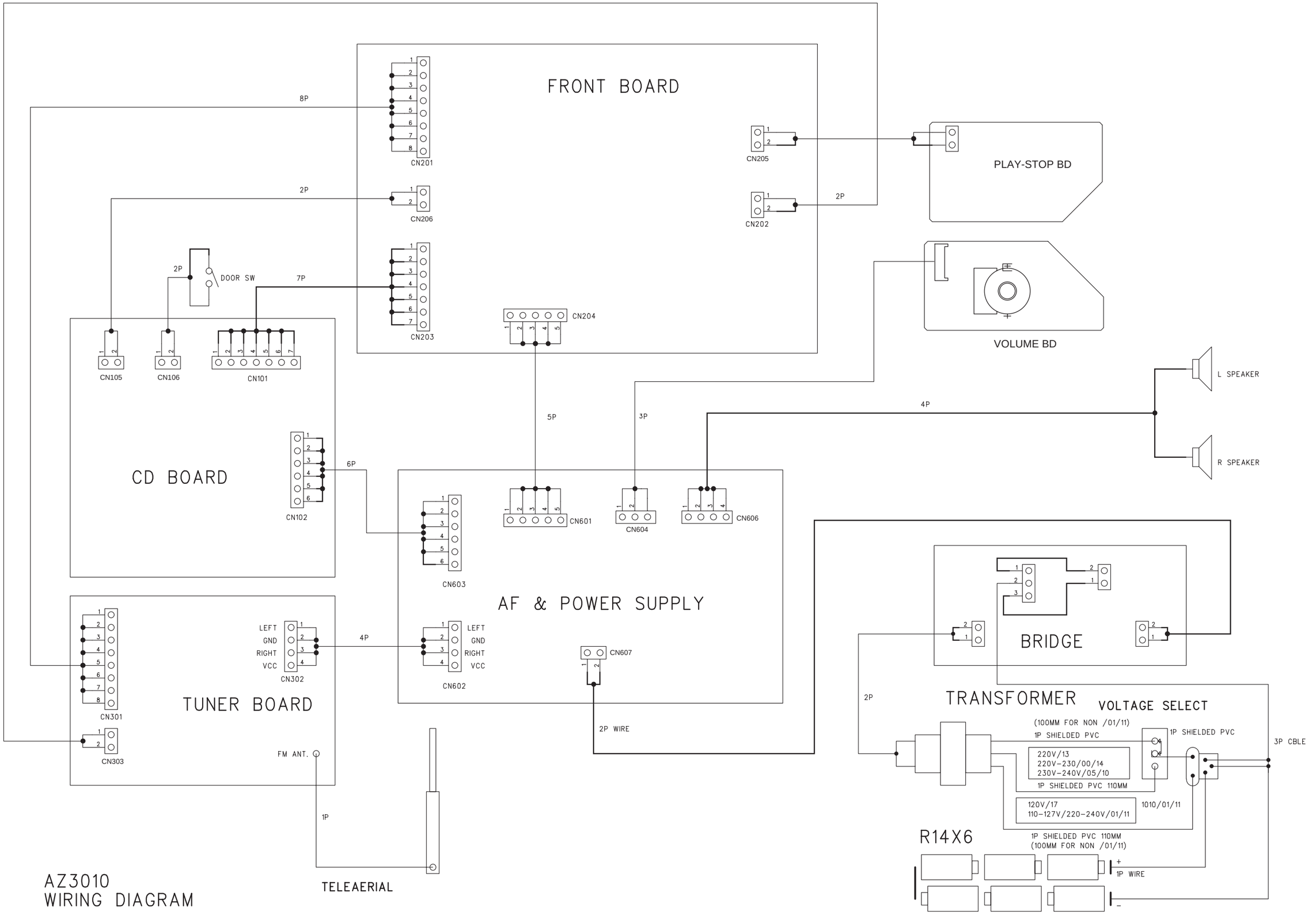
For more detail on operation instruction please visit Philips Audio internet site :
http://www.audio.philips.com

AZ-3010/ALL BLOCK DIAGRAM



4 - 2

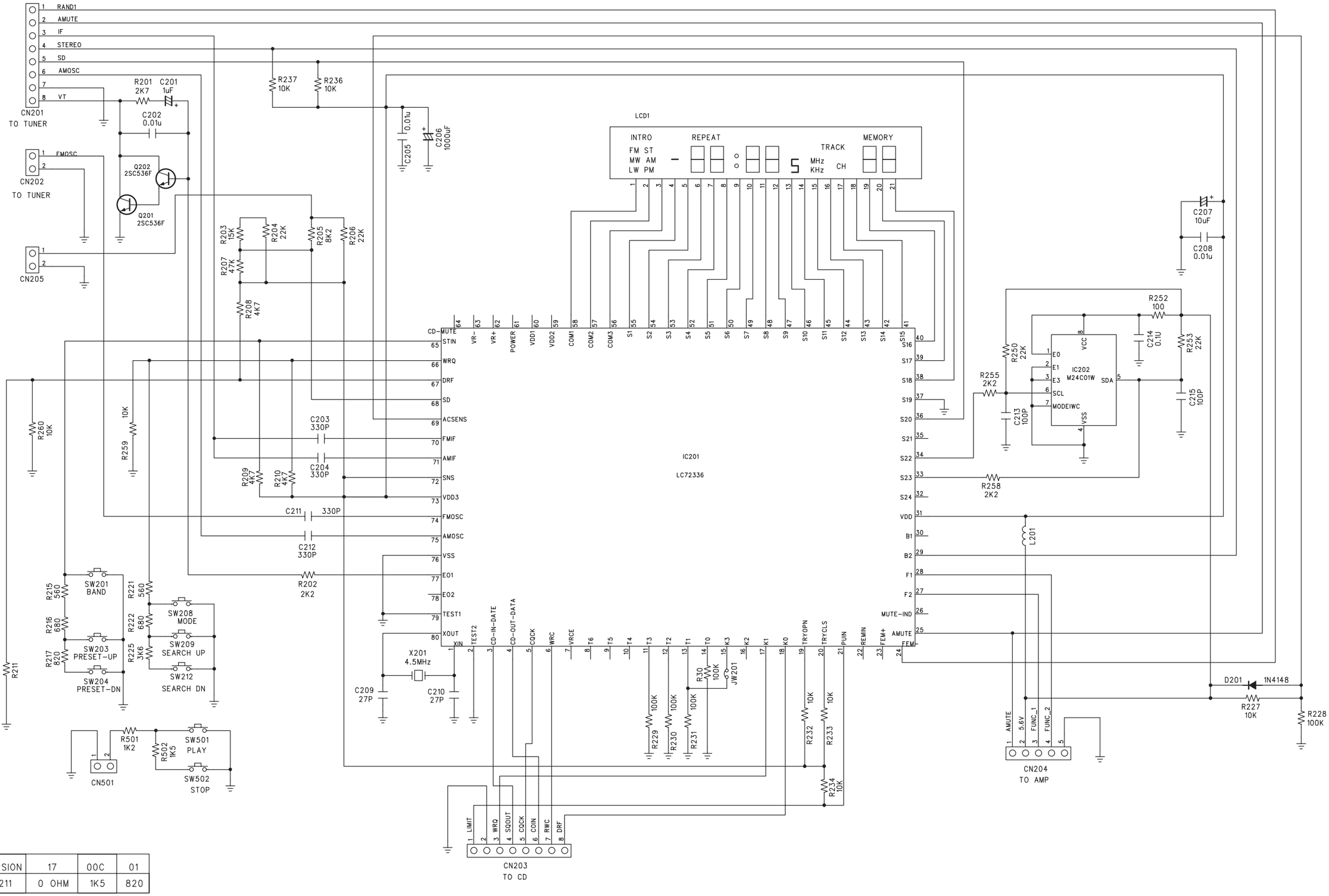
WIRING DIAGRAM



AZ3010
WIRING DIAGRAM

5 - 1

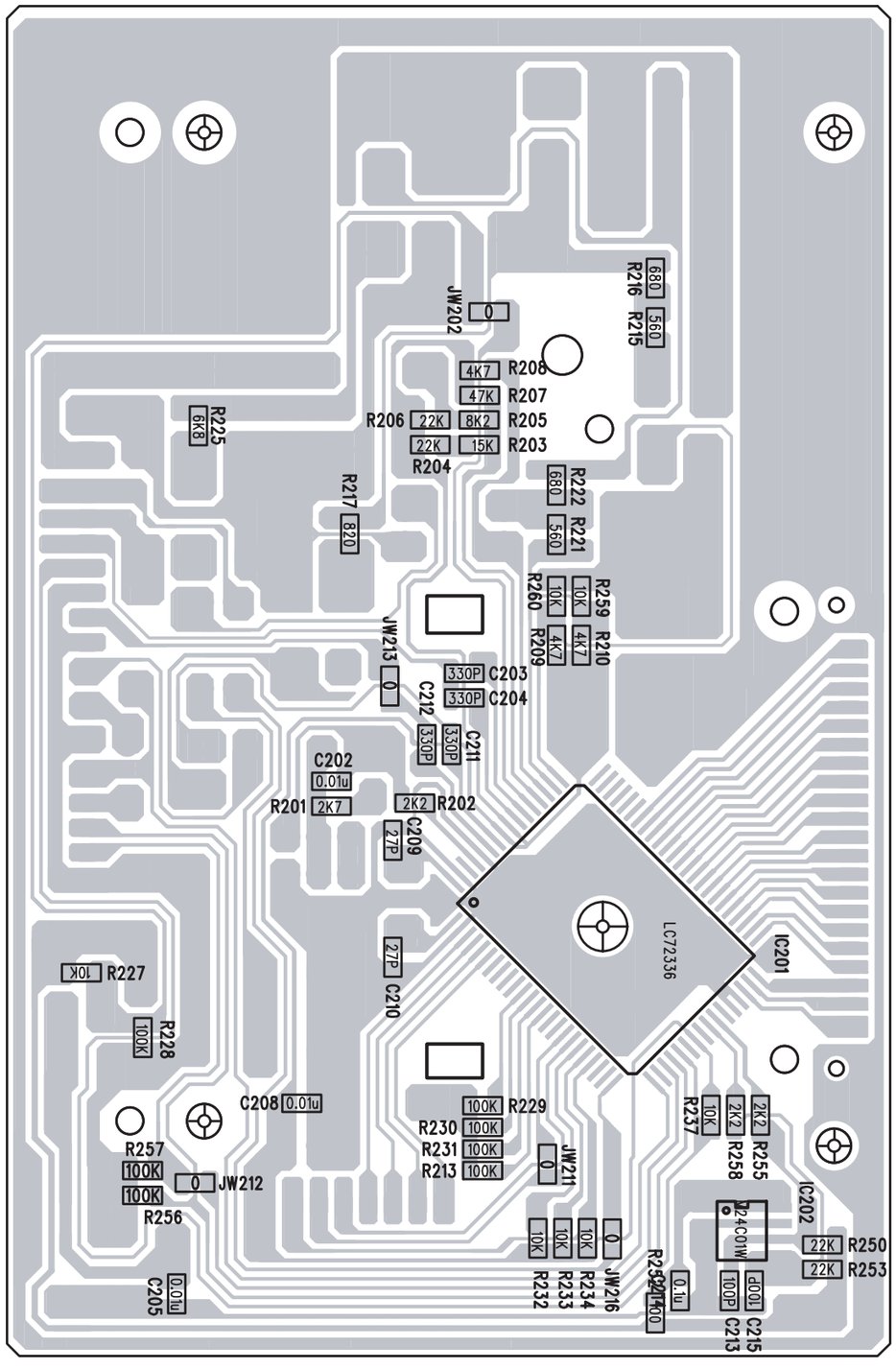
FRONT BOARD - CIRCUIT DIAGRAM



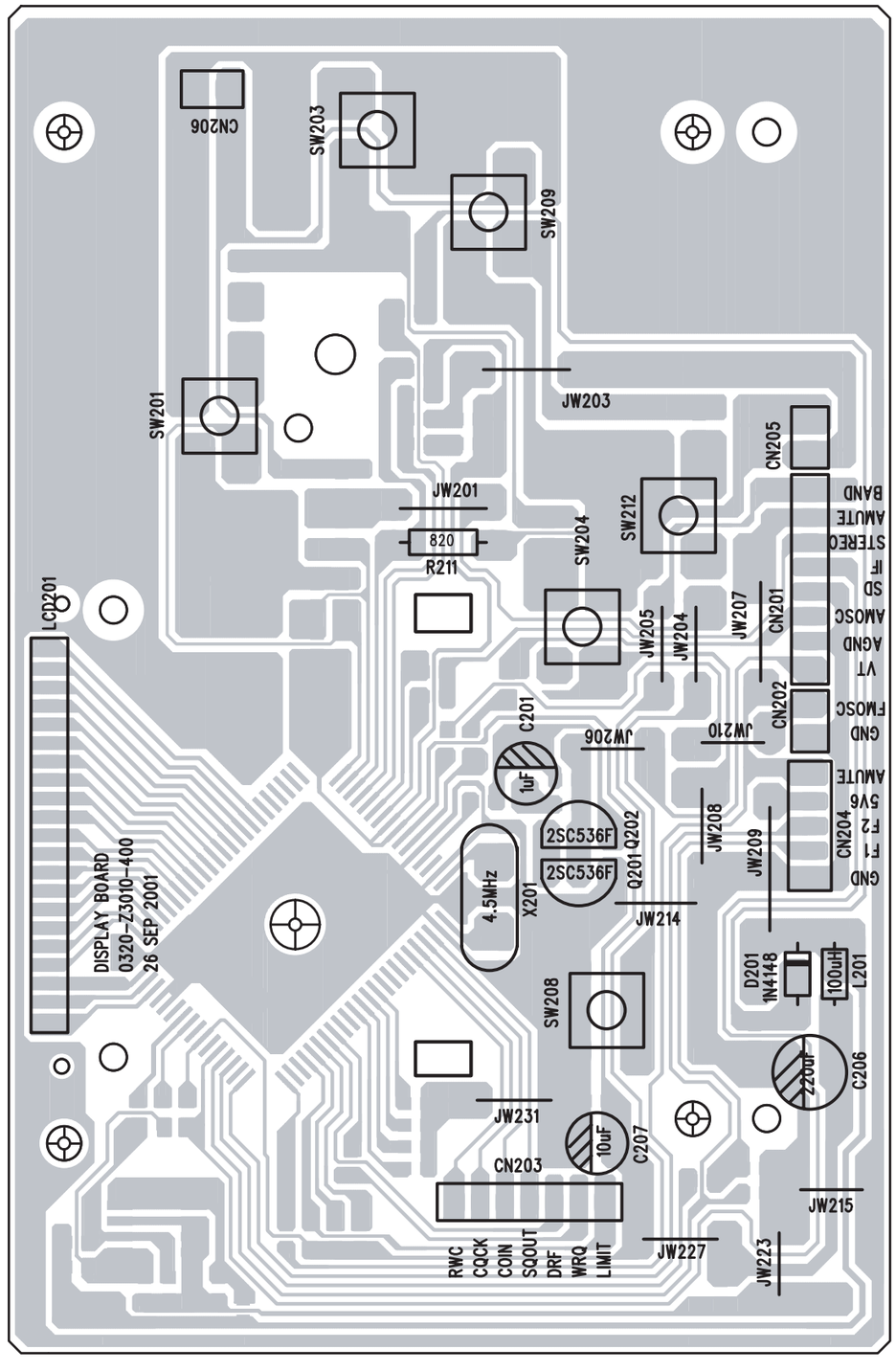
VERSION	17	00C	01
R211	0 OHM	1K5	820

5 - 2

FRONT BOARD - LAYOUT DIAGRAM



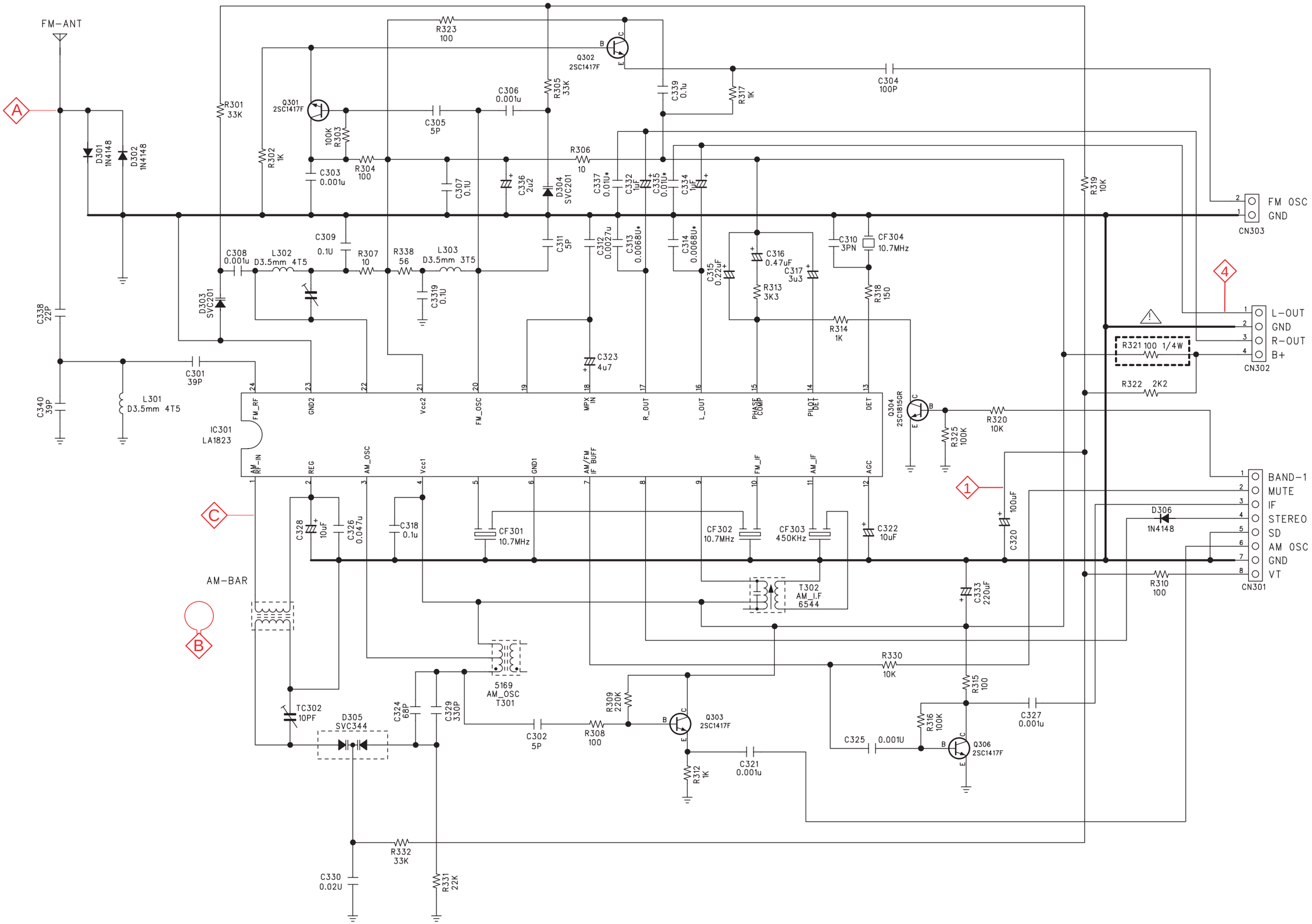
SOLDER SIDE



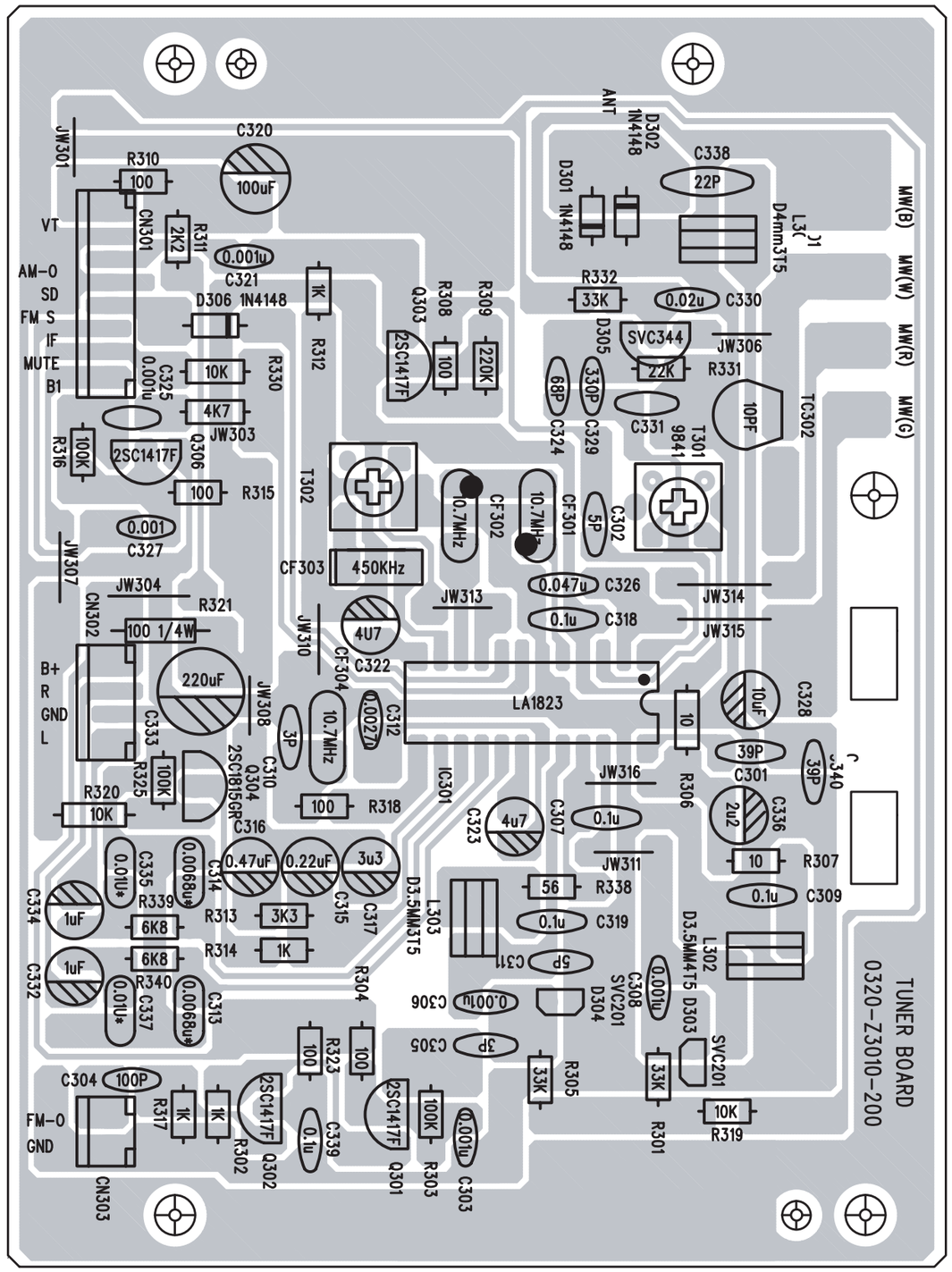
COMPONENT SIDE

6 - 1

TUNER BOARD - CIRCUIT DIAGRAM

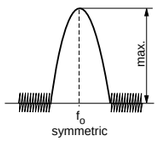
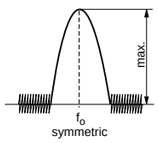


TUNER BOARD - LAYOUT DIAGRAM



6 - 2

TUNER ADJUSTMENT TABLE

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz			108MHz	L303	◇1	4V -0.2V
			87.5MHz	check		0.9V -0.2V
MW FM/AM-version, 10kHz grid 530 - 1700kHz			1700kHz	T301		3.4V - 3.5V
			530kHz	check		0.6V - 0.7V
FM/MW-version, 9kHz grid 531 - 1602kHz			1602kHz	T301		3.6V - 3.7V
			531kHz	check		0.6V - 0.7V
FM IF						
FM						
FM RF						
FM 87.5 - 108MHz	108MHz	◇A	108MHz	L302	◇4	MAX
	87.5MHz	mod=1kHz Δf=22.5kHz	87.5MHz			
AM IF						
MW	450kHz	◇C Δf=10kHz V_{RF} = 0.5mV (as low as possible)	558kHz (or 560kHz)	T301	◇4	
AM RF						
MW FM/MW-version, 9kHz grid 531 - 1602kHz	1494kHz	◇B	1494kHz	TC302	◇4	
	558kHz		558kHz	MW ferrite coil		
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz	Δf = 30kHz V_{RF} as low as possible	1500kHz	TC302		
	560kHz		560kHz	MW ferrite coil		

ECO6, general with ferrite antenna, 070799

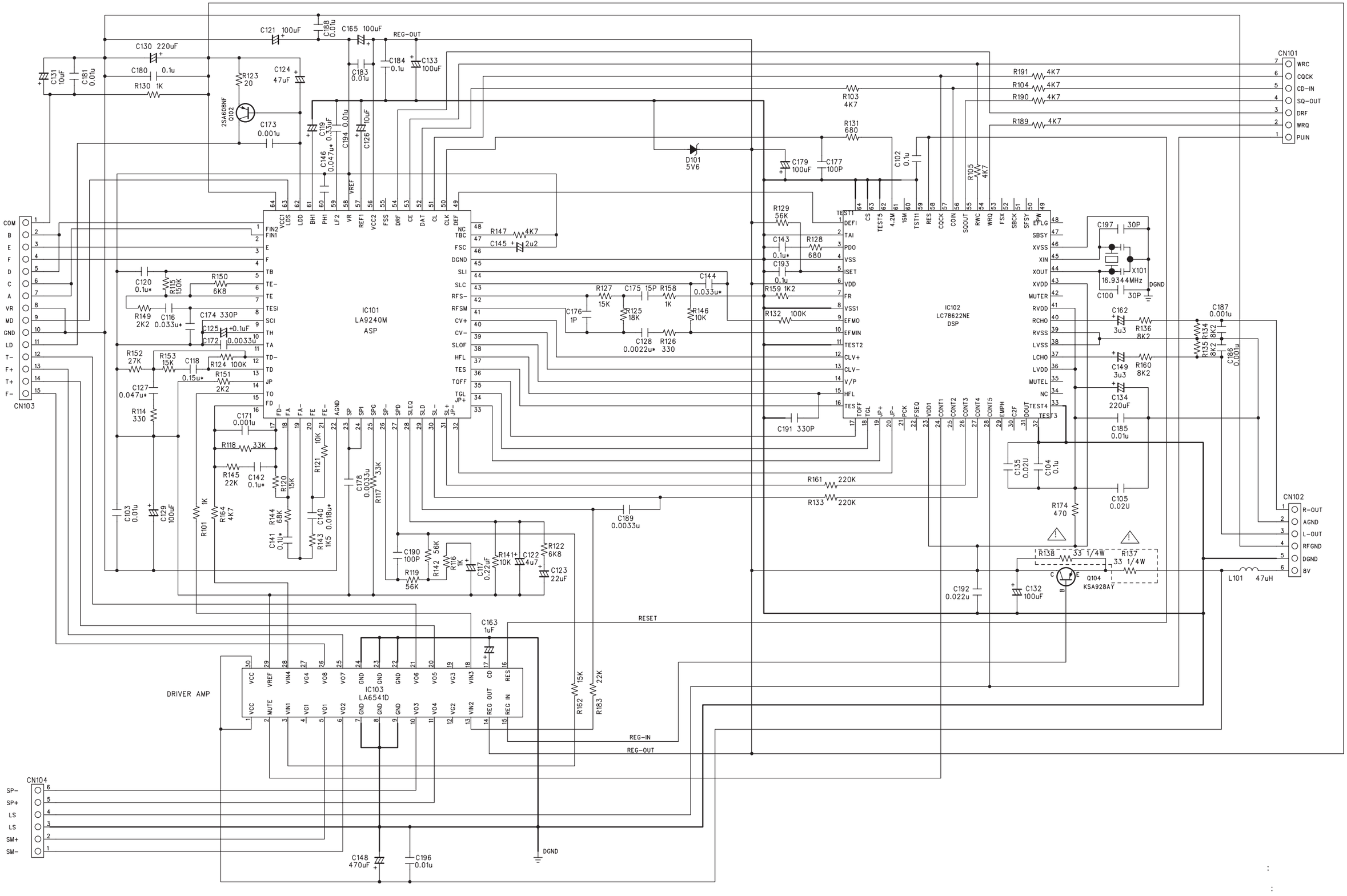
1) If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

2) RC network serves for damping the IF-filter while adjusting the other one.

↕ Repeat

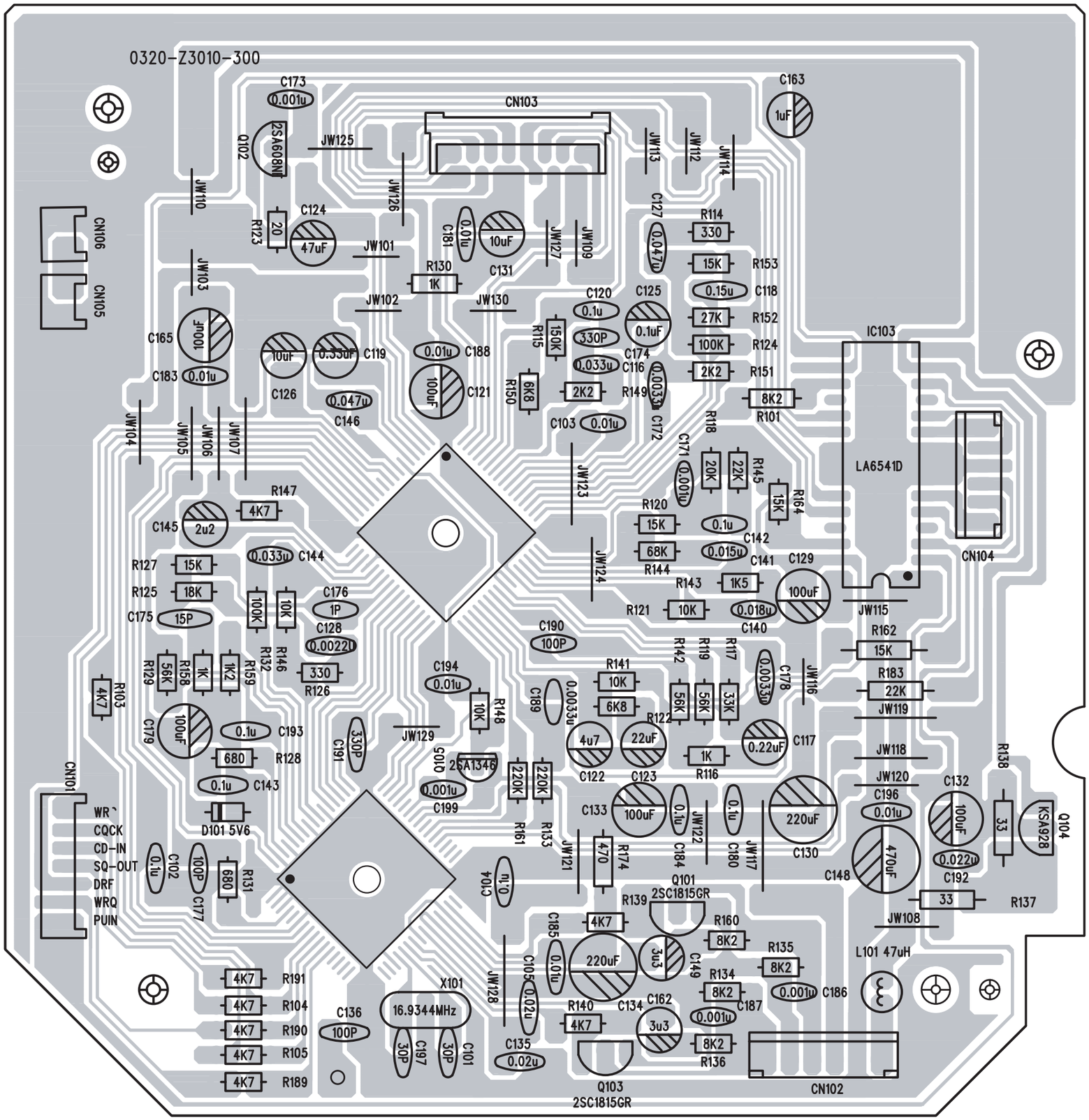
7 - 1

CD BOARD - CIRCUIT DIAGRAM



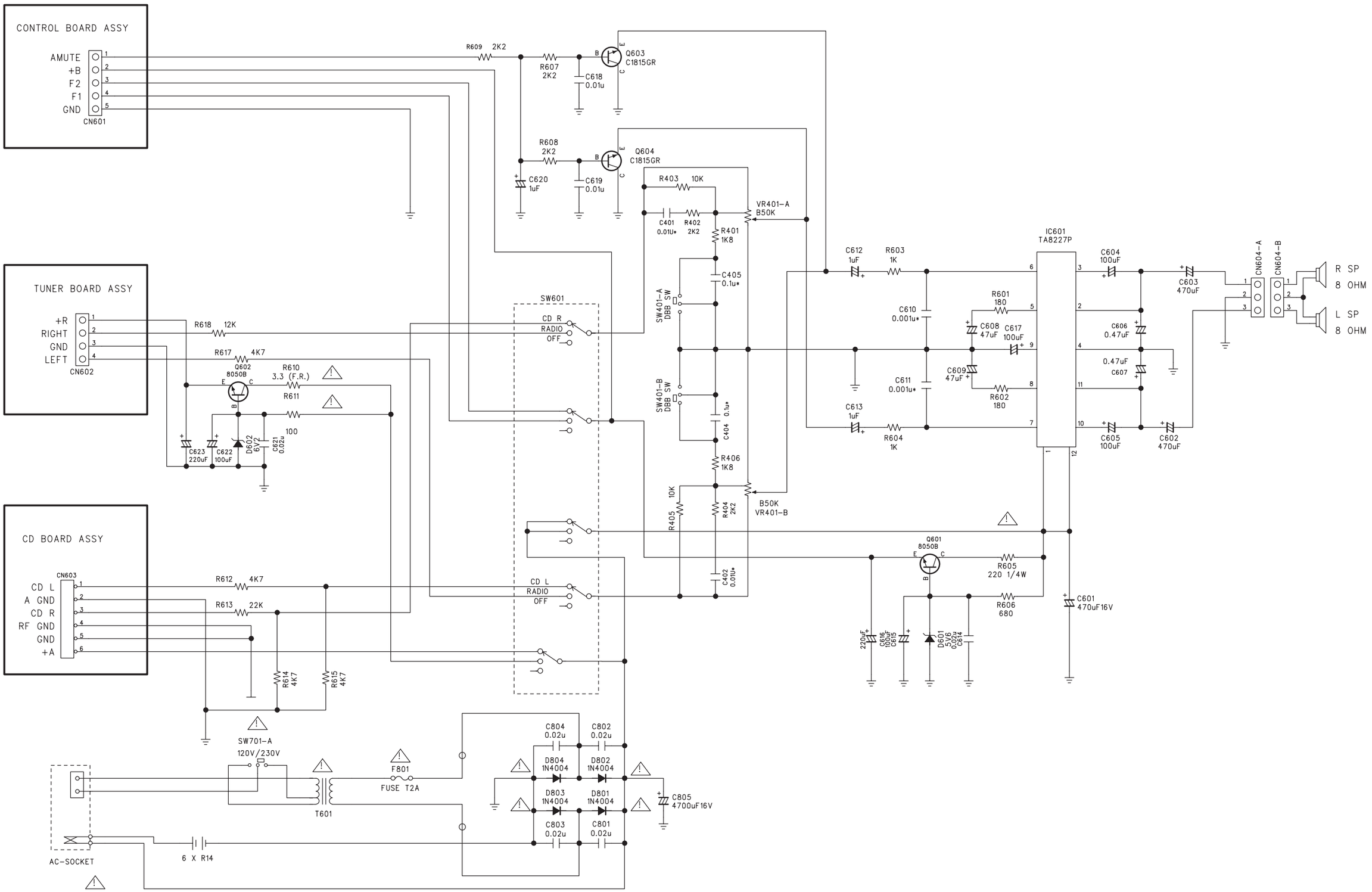
7 - 2

CD BOARD - LAYOUT DIAGRAM


0320-Z3010-300
CN103
CN106
CN105
CN101
CN104
CN102
IC103
LA6541D
Q102
2SA608NT
Q101
2SC1815GR
Q103
2SC1815GR
Q105
2SA1346
Q104
KSA928
X101
16.9344MHz
L101 47uH
WR`
CQCK
CD-IN
SQ-OUT
DRF
WRQ
PUIN
D101 5V6
C173 0.001u
C163 1uF
C124 47uF
C181 0.01u
C131 10uF
C165 100uF
C183 0.01u
C126 10uF
C119 0.33uF
C188 0.01u
C121 100uF
C146 0.047u
C103 0.01u
C120 0.1u
C125 0.1uF
C174 0.033u
C116 0.0033u
C172
C127 0.047u
C153 0.15u
C118
C152
C124
C124
C124

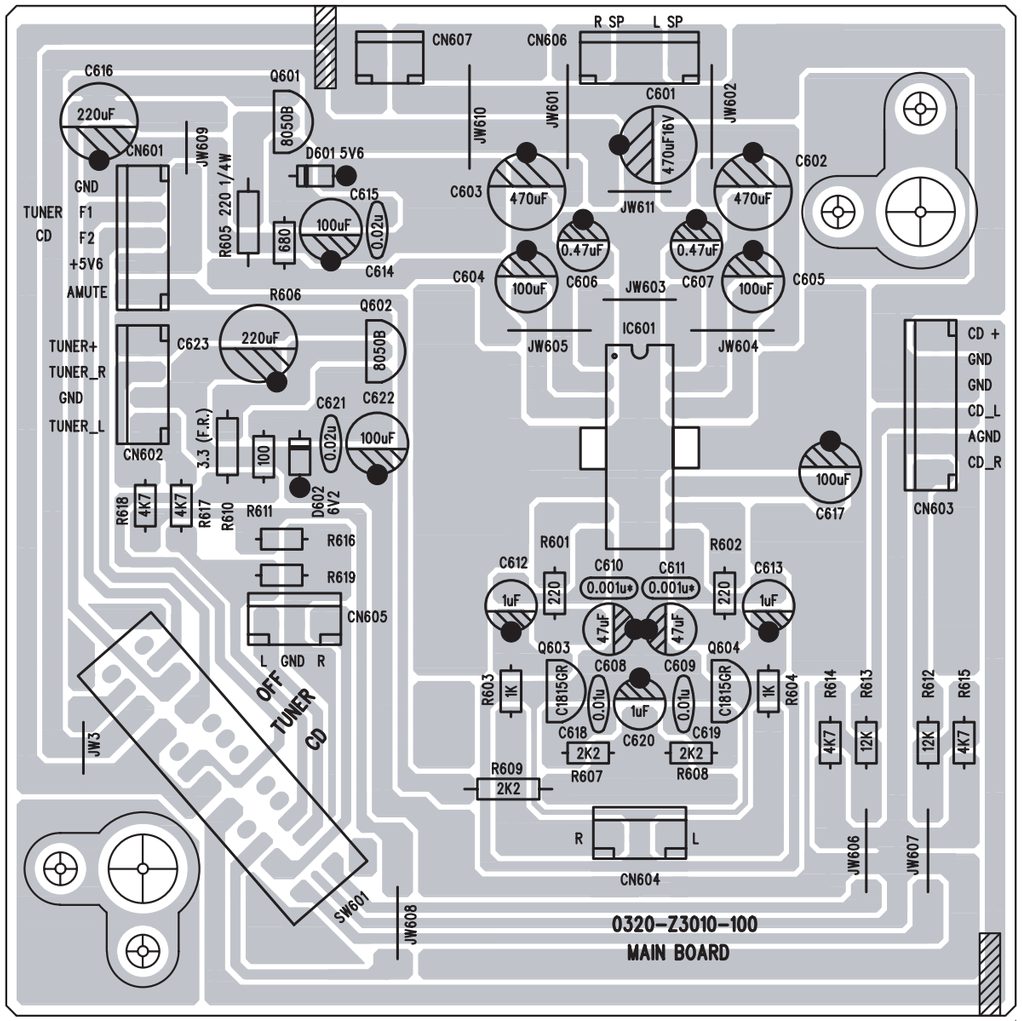
8 - 1

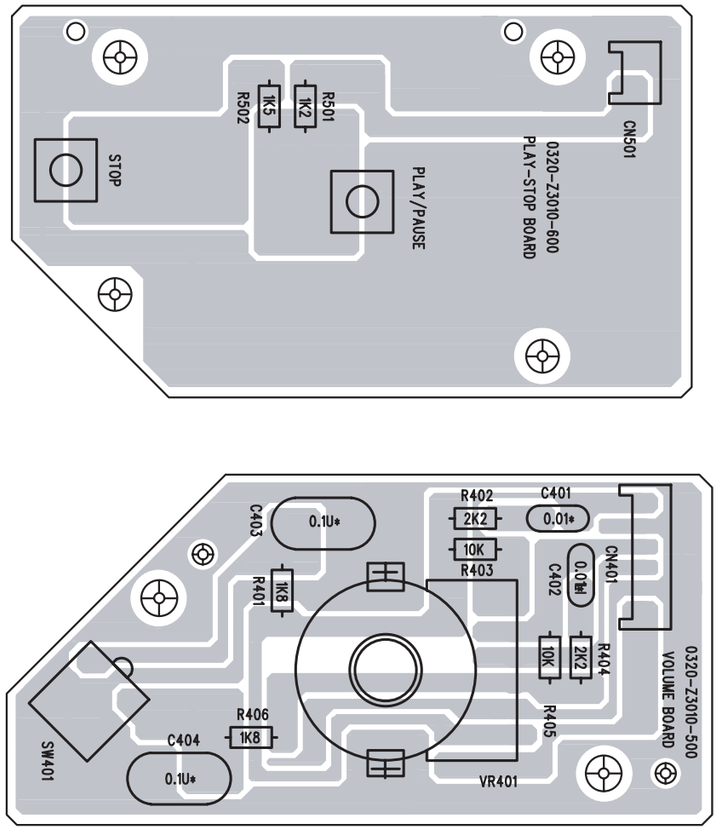
AUDIO BOARD - CIRCUIT DIAGRAM

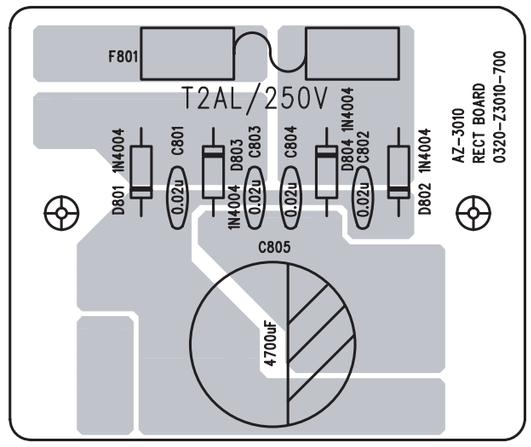


8 - 2

AUDIO BOARD - LAYOUT DIAGRAM

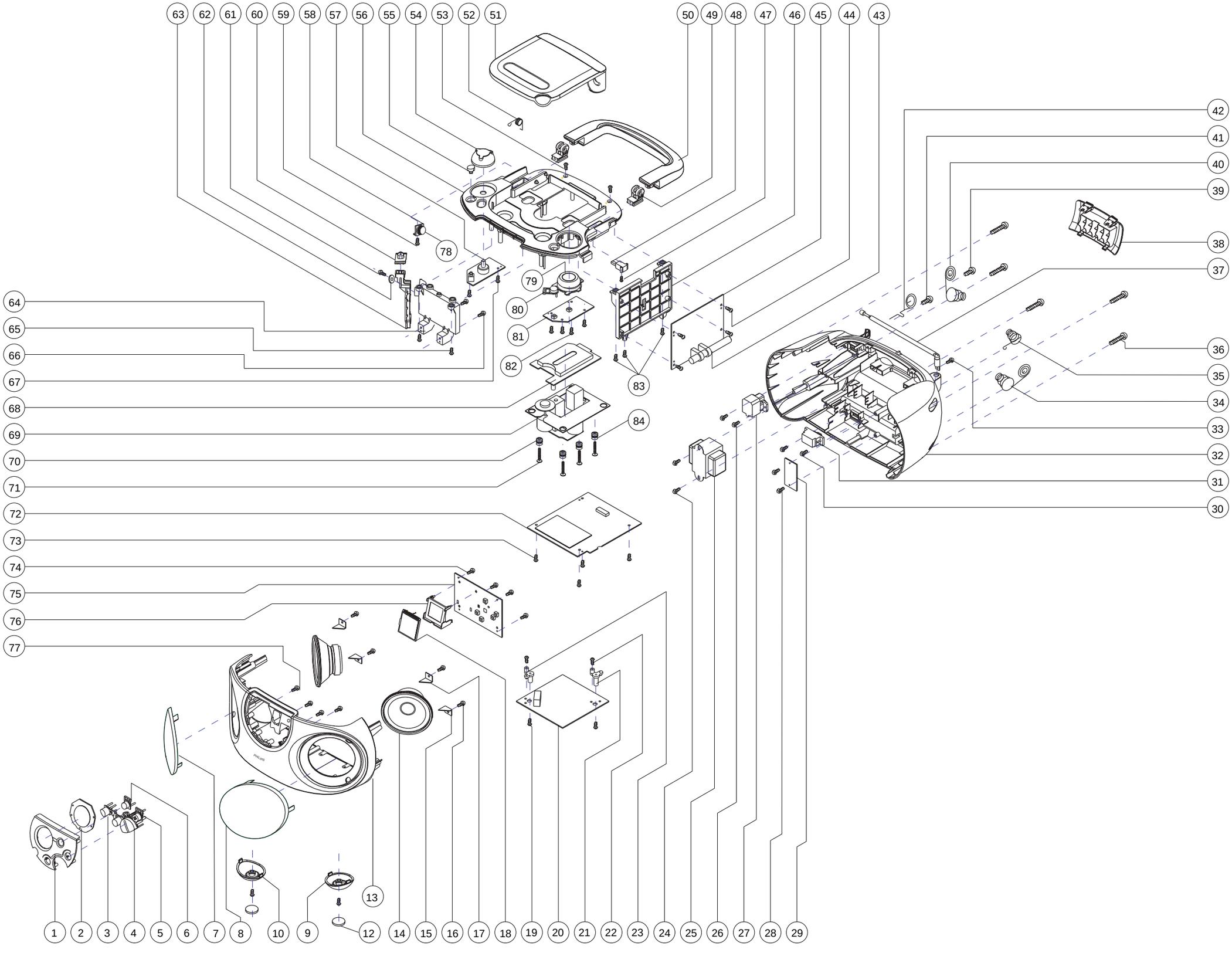






9 - 1

EXPLODED VIEW DIAGRAM - CABINET



MECHANICAL PARTSLIST

1 - 6	9965 000 11795	F. CONTROL PANEL ASSY (AZ3010)
1 - 6	9965 000 12109	F. CONTROL PANEL ASSY (AZ3011)
1 - 6	9965 000 12109	F. CONTROL PANEL ASSY (AZ3012)
9	9965 000 11803	FEET-RIGHT
10	9965 000 11802	FEET-LEFT
12	9965 000 11807	RUBBER FOOT STAND
13	9965 000 11790	FRONT CABINET ASSY (AZ3010)
13	9965 000 12018	FRONT CABINET ASSY (AZ3011)
13	9965 000 12117	FRONT CABINET ASSY (AZ3012)
32	9965 000 11791	REAR CABINET
34	9965 000 11810	BATT. CONTACT SPRING (+/-)
35	9965 000 11809	BATT. CONTACT SPRING (-VE)
37	4822 303 14022	TELESCOPIC AERIAL
38	9965 000 11796	BATTERY DOOR
40	9965 000 11810	BATT. CONTACT SPRING (+/-)
42	9965 000 11808	BATT. CONTACT SPRING (+VE)
49	9965 000 08532	HANDLE BRACKET
50	9965 000 11794	HANDLE
51	9965 000 11792	CD DOOR
52	9965 000 04923	CD DOOR SPRING
54	9965 000 11797	VOLUME KNOB
55	9965 000 11800	DBB KNOB
56	9965 000 11793	CD TRAY
58	9965 000 11804	CD DOOR GEAR HOLDER
60	9965 000 11801	SOURCE SELECT KEY
63	9965 000 11805	SWITCH LEVER
68	4822 442 01905	LENS COVER
69	3103 309 05360	CD DA11B1N DRIVE ASSY
70	4822 529 10387	DAMPER - RUBBER (40 DEG)
76	9965 000 11806	LCD BRACKET
78	9965 000 04921	CD DOOR GEAR
79	9965 000 11798	PLAY/PAUSE KEY
80	9965 000 11799	STOP KEY
84	4822 529 10386	DAMPER - RUBBER (30 DEG)

ELECTRICAL PARTSLIST

- RESISTORS -

VR401	9965 000 11838	ROTARY VOL. B50K

- CAPACITORS -

TC301	9965 000 11821	10 PF TRIMMER CAP.
TC302	9965 000 11821	10 PF TRIMMER CAP.

- COILS & FILTERS -

ANT3	9965 000 11811	AM ANT COIL
CF301	9965 000 11812	CER.FILTER LT10.7M
CF302	9965 000 11812	CER.FILTER LT10.7M
CF303	9965 000 11813	CER. FILTER SFU 450Y
CF304	9965 000 11814	CER.FTR CDA10.7MG1-A
L201	9965 000 11830	FXD INDUCTOR 100UH
L301	4822 157 71571	BFP A-258A PI-03-014
L302	9965 000 11817	FM COIL 3.5T
L303	4822 157 71567	FM COIL 2.5T
T301	9965 000 11819	AM OSC COIL
T302	9965 000 11820	AM IFT (YELLOW)
X101	9965 000 10692	CER. RESONATOR 16.93 MHZ
X201	9965 000 11833	CRYSTAL 4.5 MHZ

- DIODES -

D201	4822 130 30621	1N4148
D301	4822 130 30621	1N4148
D302	4822 130 30621	1N4148
D303	4822 130 62625	SVC201SPA
D304	4822 130 62625	SVC201SPA
D305	9965 000 11815	SVC344
D306	4822 130 30621	1N4148
D601	9965 000 11835	ZENER 5.6V 1/2W
D602	9965 000 11836	ZENER 6.2V 1/2W
D801	5322 130 34574	1N4004G
D802	5322 130 34574	1N4004G
D803	5322 130 34574	1N4004G
D804	5322 130 34574	1N4004G

- IC & TRANSISTORS -

IC101	9965 000 11823	LA9241M
IC102	9965 000 11824	LC78622N/E
IC103	4822 209 15786	LA6541D
IC201	9965 000 11828	LC72336-9A83
IC202	9965 000 11829	BR24C02FW EPROM
IC301	9965 000 11816	LA1823
IC601	4822 209 31544	TA8227P
Q102	9965 000 11825	2SA608NF-NPA-AT
Q104	9965 000 11826	KSA928AY
Q108	4822 130 43026	2SA1346

- IC & TRANSISTORS -

Q201	9965 000 11831	2SC536F
Q202	9965 000 11831	2SC536F
Q301	9965 000 11818	2SC1417F
Q302	9965 000 11818	2SC1417F
Q303	9965 000 11818	2SC1417F
Q304	4822 130 41319	2SC1815BL
Q305	4822 130 41319	2SC1815BL
Q306	9965 000 11818	2SC1417F
Q601	4822 130 63422	8050B
Q602	4822 130 63422	8050B
Q603	4822 130 41319	2SC1815BL
Q604	4822 130 41319	2SC1815BL

- SWITCHES -

SW201	9965 000 11832	TACT SWITCH
SW203	9965 000 11832	TACT SWITCH
SW204	9965 000 11832	TACT SWITCH
SW208	9965 000 11832	TACT SWITCH
SW209	9965 000 11832	TACT SWITCH
SW212	9965 000 11832	TACT SWITCH
SW401	4822 276 13972	PUSH SWITCH
SW501	9965 000 11832	TACT SWITCH
SW502	9965 000 11832	TACT SWITCH
SW601	9965 000 11837	SLIDE SWITCH SST-63D01
	4822 277 30971	VOLTAGE SEL. SWITCH

- MISCELLANEOUS -

F801	⚠	4822 070 32001	FUSE 200MA
		9965 000 11822	M10X60 FERRITE BAR
		9965 000 11827	FFC CABLE 15 PINS 85MM
		9965 000 11834	LCD DISPLAY (91555TR-P)
		9965 000 11839	SPEAKER 3" (77MM)
	⚠	9965 000 11861	AC SOCKET (/17 ONLY)
	⚠	9965 000 08577	AC SOCKET (EXCEPT /17)
	⚠	9965 000 11859	TRANSFORMER 120/230V
	⚠	9965 000 11862	TRANSFORMER 120V (UL)
	⚠	9965 000 11840	TRANSFORMER 230V
	⚠	2422 070 98151	AC CORD SET
	⚠	4822 321 11199	AC CORD SET (/05 ONLY)
	⚠	9965 000 12162	AC CORD SET (/10 ONLY)
	⚠	2422 070 98152	AC CORD SET (/17 ONLY)

Note: Only these parts mentioned in the list are normal service parts.